

# **Telecom Churn Analysis**

## **Team members**

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## **Abstract:**

Churn is major problem in any industry such problem is also observed in telecom industry. In given data we are looking for churn analysis for given data we first perform EDA and then by comparing various elements such as rates, voice mail, voice messages, international calls etc. By means of doing this analysis we can go for conclusion where is churn rate is high why customers are leaving. For a telecom industry it is very hard to acquire new customers so they should focus on how to retain existing customers.

## **1.Introduction**

Due to the rapid growth in the data communication network and advancement in the Information Technology, a massive amount of data is available. With the increase in the competition in the market, companies have devoted their time more in making their previous clients associated with them rather than convincing the new clients. This has been justified by Van Den Poel and Larivi\_ere who surveyed on the importance of the economic value of customer retention. Since the major source of profit are customers, so customer churn

plays a significant role in the survival and development of telecommunication industry. Therefore tools have to be developed for predictive modeling and classification of various systematic tasks. The association of Customer Relationship Management helps in capturing consumer information and the organization further use this information to satisfy customer needs. In order to improve and analyze the customer acquisition and retention, CRM tools have been developed for increase in the profitability and help in the predictive modeling and classification of various logical tasks. Data mining plays a very important role in the telecommunication companies to improve their marketing efforts, identify fraud, and better manage their telecommunication networks. Data mining techniques are applied in telecommunications for CRM because of the rapid growth of the huge amount of data; high pace in the market competition and increase in the churn rate. Customer acquisition and retention can be improved by applying CRM tools for increasing profit and for supporting analytical tasks . A lot of scope has evolved its way for the researchers for analysis of the data and to present the complete information for

promoting their business because of the hidden data in telecom industries.

## **2.Problem Definition:**

Customer churn-shifting from one service provider to the next competitor in the market, is a key challenge in highly competitive markets and is very much observed in telecommunication sector. Customer churns are those targeted customers who have decided to leave a service provider, product, or even a company and shifted to the other competitor in the market. Literature reveals the following three types of customer churns:

- Active churner (Volunteer): those customers who want to quit the contract and move to the next provider.
- Passive churner (Non-Volunteer): When a company discontinues service to a customer.
- Rotational churner (Silent): Those customers who discontinue the contract without the prior knowledge of both parties (customer and company), where each party (e.g. customer or company) may suddenly terminate the contract without any notification

Churn prediction has been widely studied in the recent decade, particularly in the following domains: Open Social Network, Banking sector, Credit Card & a Financial Service provider, Online Gaming industry, Human Resource department of competitive organizations, Subscription service market, Question and Answer Q&A forums and Insurance service providers. It is clear from this discussion that customer churn as a problem is crucial for various organizations. Simultaneously, customer churn problem is rapidly being observed in

telecommunication industry around the globe as well.

## **3.EDA on given Data set**

Digging into data we understand that

- There is no null value in the data set.
- In state column there are total 51 unique states.
- Total 20 columns with values such as float, integer, Boolean and object.
- Dependent variable should be considered as Churn.
- Graphical representation according to various columns and with manipulation of columns.
- By manipulation of columns we can find average price for day, evening, night, international.

As the data analysis is one of the important parts in EDA in this data set there is no need of data manipulation as there is no null values in data set. The given data cannot be shown virtually or graphically as it is because it is a large data set.

For this problem we need to go for group-by operation in which we are grouping states and manipulating columns for case of columns we need to take mean of all values and put it into graphs. From manipulation it is seen that the states which are moving towards churn are not approaching towards customer service.

instead when customer put request customer service should reach towards them to solve their problems.

#### 4.Churn percentage of states (EDA)

From pi chart we can see churn percentage is about 14.5% which is more. We have to look for the customers who are leaving the company or not satisfied with the results of the company.

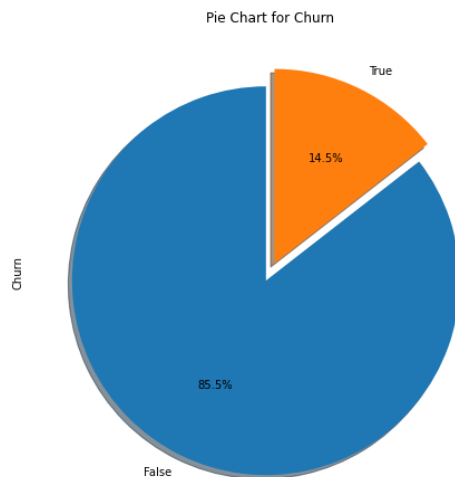


Fig 1: Pi chart of customer churn.

We have to look for the usage of the different calls provided by the company and used by the customers. The graph below shoes total use in particular day consumed by customers. From the graph below, we can see it is a multiline plot in usage of customers is given here we can see total day usage is more as compared to the night usage and evening usage and international calls are used less also.

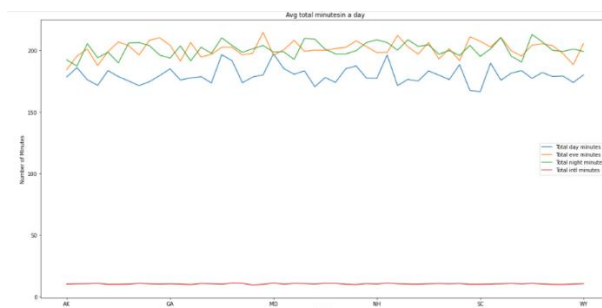


Fig 2: Multiline plot of customers usage and minutes.

#### 5.Relation between Churn and Others

As we are looking for the customer churn, we have to consider which customers are churning most. From scatter plot we can see there are mix match behaviour of customers in case of night and evening calls but customers who are using more day calls have more percentage towards churn. From multiline plot given below we can see which customers is generating more amount of revenue for company.

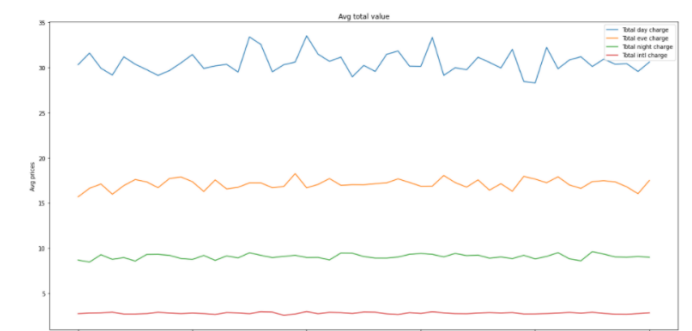


Fig 3: Multiline plot of customers usage and charges.

From above graph we can see more revenue is generated by day customers as well as from scatter plot it is seen that day customers with high usages are moving towards churn more.

With the consideration of prices international calls have more price then other plans. Churn rate for international customers are more as call minutes increase for this case company come with the balanced price list such as it should not be more for day and lea for night.

If the churn rate of company is 50% then the company will be going to shut in two years. As company with churn rate 25% then it will shut in four years so Churn is the major factor to be taken in consideration.

## 6.Conclusion :

It has become known that predicting churn is one of the most important sources of income to telecom companies.

Hence, this research aimed to build a system that predicts the churn of customers.

- The customers having high call minutes are moving towards a churn so we can reduced this churn rate by giving the better network like vtol in those area.
- Due to the high day calling rates customers are moving to the churn so by reducing the charge rate will decrease the churn rate.
- It has been found that the customers having international plan are most likely to leave services which clearly indicates there is discontinue in the network for the international service that needs to be improve as early as possible.
- The state like CA has highest rate of churn nearly 26% ,so by offering them a good offers and improve service can reduce this churn rate..
- Customers having one or two serive calls likely to churn which shows there is Slow or no response to customer complaints.

## 7.References

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